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(54) MANUFACTURE OF SUPPORT FOR LITHOGRAPHIC PRINTING PLATE, SUPPORT FOR LITHOGRAPHIC PRINTING PLATE, AND PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE

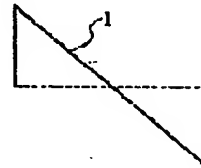
(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method for manufacturing a support for a lithographic printing plate by which it is possible to obtain a photosensitive lithographic printing plate capable of stably manufacturing high-quality print, a support for a lithographic printing plate, and a photosensitive lithographic printing plate.

SOLUTION: This method for manufacturing a support for lithographic printing performs the electrolytic surface roughing treatment of an Al-size plate a few times in an acidic electrolyte with at least, two electrolytic cells using an alternating current waveform 1 whose polarity changes alternately.

Further, the shape of an alternating current waveform to be used for at least, one electrolytic cell is made different from the shape of an alternating current waveform to be used for the other electrolytic cell.

The method for manufacturing the support for lithographic printing is such that, after forming pits, each of which has an opening dia. of 2-30 μ m, the edge part of each of the pits may be selectively removed. In addition, the support for lithographic printing is of such a construction that the pits with an opening dia. of 0.2-0.8 μ m are overlapped among the pits having an opening dia. of 2-30 μ m and the edge parts of the pits with an opening dia. of 2-30 μ m are smooth. The photosensitive lithographic printing plate is formed by coating a photosensitive resin on the support for lithographic printing.



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CLAIMS

[Claim(s)]

[Claim 1] In the production method of the base material for the lithography versions multiple-times-electrolysis-split-face--ization-processed in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns The production method of the base material for the lithography versions characterized by differing from the configuration of police box current wave type which the configuration of police box current wave type used to at least one cell uses to other cells.

[Claim 2] The production method of the base material for the lithography versions according to claim 1 characterized by the current density of one cell being higher than the current density of other cells.

[Claim 3] The production method of the base material for the lithography versions characterized by removing the edge section of this pit alternatively after making the pit which has a diameter of opening (2-30micro) in the production method of the multiple-times-electrolysis-split-face--ization-processed base material for the lithography versions in the acid electrolytic solution which has at least two cells form using the police box current wave type from which polarity changes an aluminum plate by turns.

[Claim 4] The production method of the base material for the lithography versions according to claim 3 characterized by the current density of one cell being higher than the current density of other cells.

[Claim 5] The base material for the lithography versions characterized by forming as it differed from the configuration of police box current wave type which the configuration of police box current wave type used to at least one cell uses to other cells while multiple-times-electrolysis-split-face--ization-processing in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns.

[Claim 6] The base material for the lithography versions characterized by having removed the edge section of this pit alternatively and forming it after making the pit which has a diameter of opening (2-30micro) form, while multiple-times-electrolysis-split-face--ization-processing in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns.

[Claim 7] the structure where it was superimposed on the pit which has a diameter of opening (0.2-0.8micro) in the base material for the lithography versions all over the pit which has a diameter of opening (2-30micro) -- having -- and -- this -- the base material for the lithography versions characterized by the edge section of a pit which has a diameter of opening (2-30micro) being smooth

[Claim 8] The photosensitive lithography version characterized by painting and forming a photopolymer layer on the base material for the lithography versions which carried out anodizing of the base material for the lithography versions according to claim 5, and obtained it.

[Claim 9] The photosensitive lithography version characterized by painting and forming a photopolymer layer on the base material for the lithography versions which carried out anodizing of the base material for the lithography versions according to claim 6, and obtained it.

[Claim 10] The photosensitive lithography version characterized by painting and forming a

photopolymer layer on the base material for the lithography versions which carried out anodizing of the base material for the lithography versions according to claim 7, and obtained it.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the production method, the base material for the lithography versions, and the photosensitive lithography version of the base material for the lithography versions.

[0002]

[Description of the Prior Art] Forming a photosensitive layer and others, such as a photopolymer layer, in a proper base material, and forming the photosensitive lithography version (a PS plate being called hereafter) from before, is performed. Usually, the base material for forming a PS plate processes a front face, and performs split-face-ization.

[0003] Conventionally, the split-face-ized method by electrolysis processing has been used as one of the surface-roughening-ized methods of the base material for PS plates. In this case, there is advanced technology using the various alternating current wave as the technique of being easy to control a configuration. For example, the method using the wave which carried out phase control of the method [voltage] using a larger alternating current wave than voltage the time of cathode and the sine wave alternating current as which it is indicated by JP,57-22036,B by the thyristor, the method using the three-phase-circuit alternating current indicated by JP,58-157997,B, the method using the alternating current on top of which the alternating current from which the frequency indicated by JP,58-207374,B differs was laid, etc. are learned at the time of the anode plate indicated by JP,55-19191,B and JP,56-19280,B.

[0004] However, since these formation of an electrolysis split face using single police box current wave type of controlling the configuration distribution of a pit was insufficient, the photosensitive lithography version which painted and formed for example, the photopolymer constituent as photosensitive matter on this base material tended to produce the variation in the performance by the version position, and, therefore, lithographic plate management was difficult for it.

[0005] By the split-face-ized method by the further conventional electrolysis processing, the upper-limb (edge) section of the formed pit remains unescapable. The photosensitive lithography version using the base material in which this edge section exists tends to generate dirt at the time of development or printing, for example, produces the greasing in undershirt development, the dirt of the non-picture section, stop dirt, blanket dirt, etc.

[0006] Moreover, it remains without being removed even if the ball-point ink which drew in the non-picture section develops negatives, and adheres to a printing plate, and there is a problem that the problem (ball-point remainder) which dirt generates into the portion at the time of printing arises.

[0007] Although the method (DESUMATTO) of flooding with alkaline-water solutions, such as a sodium hydroxide, after electrolysis processing generally, and removing the edge section is taken in order to solve these problems, by this method, it is difficult to remove only the edge section of a pit alternatively, and the formed pit itself will be dissolved. For this reason, solution of the problem mentioned above was inadequate.

[0008]

[Problem(s) to be Solved by the Invention] The purpose of this invention is solving many problems of the above-mentioned conventional technology, and offering the production method of the base material for the lithography versions the photosensitive lithography version which can manufacture quality printed matter stably being obtained, offering such a base material for the lithography versions, and offering such a photosensitive lithography version.

[0009]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the production method of the base material for the lithography versions concerning this invention In the production method of the base material for the lithography versions multiple-times-electrolysis-split-face-ization-processed in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns It carries out differing from the configuration of police box current wave type which the configuration of police box current wave type used to at least one cell uses to other cells to the composition by which it is characterized.

[0010] Moreover, the production method of other base materials for the lithography versions concerning this invention In the production method of the base material for the lithography versions multiple-times-electrolysis-split-face-ization-processed in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns After making the pit which has a diameter of opening (2-30micro) form, it carries out removing the edge section of this pit alternatively to the composition by which it is characterized.

[0011] In order to solve the above-mentioned technical problem, the base material for the lithography versions concerning this invention While multiple-times-electrolysis-split-face-ization-processing in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns It carries out having formed, as it differed from the configuration of police box current wave type which the configuration of police box current wave type used to at least one cell uses to other cells to the composition by which it is characterized.

[0012] Moreover, after other base materials for the lithography versions concerning this invention make the pit which has a diameter of opening (2-30micro) form while multiple-times-electrolysis-split-face-ization-processing them in the acid electrolytic solution which has at least two cells using the police box current wave type from which polarity changes an aluminum plate by turns, they carry out having removed the edge section of this pit alternatively and having formed it to the composition by which it is characterized.

[0013] moreover, the structure where the base material for the lithography versions of further others concerning this invention was superimposed on the pit which has a diameter of opening (0.2-0.8micro) all over the pit which has a diameter of opening (2-30micro) in the base material for the lithography versions -- having -- and -- this -- it carries out that the edge section of a pit which has a diameter of opening (2-30micro) is smooth to the composition by which it is characterized

[0014] In order to solve the above-mentioned technical problem, the base material for the photosensitive lithography versions concerning this invention carries out having painted and formed the photopolymer layer on the base material for the lithography versions which carried out anodizing of each base material for the lithography versions concerning the above-mentioned this invention, and obtained it to the composition by which it is characterized.

[0015] While the effect of (1) - (4) listed next was acquired and being able to cancel the trouble in the conventional technology therefore by this invention, the effect of following (5) was also acquired by the surprising thing.

[0016] (1) The uniform and precise pit was formed in the base material. Consequently, the performance variation of the photosensitive lithography version using this base material was reduced.

(2) It is hard to become dirty at the time of printing. For this reason, the amount of supply of dampening water can be reduced and water can be wrung. Thereby, the ink concentration of the picture section increases and quality printed matter is obtained. In addition, stop dirt and blanket

dirt decrease.

(3) The dirt in an undershirt phenomenon is reduced. For this reason, development latitude also becomes spreads.

(4) The problem of the ball-point remainder is solved. Therefore, dirt adhesion in printed matter is lost.

(5) The dampening water resistance (H liquid resistance) of the printing version picture section at the time of printing improved.

[0017] this invention is explained further below. It is made to differ from the configuration of police box current wave type which the configuration of police box current wave type used to at least one cell uses to other cells in the production method of the base material for the lithography versions concerning this invention. In this case, you may make it change arbitrarily the current density in the wave from which police box current wave type differs, and a phase (except for a sine wave) and frequency. Desirable current density is later mentioned in the explanation about split-face-izing.

[0018] When a different configuration of police box current wave type is accompanied by the phase shift, a desirable phase shift is 5 - 175 degrees. It is 20 - 150 degrees still more preferably.

[0019] The desirable frequency of the police box current wave type to be used is 5-250Hz. It is 10-100Hz still more preferably.

[0020] The police box current to be used may be arbitrary waves. Preferably, they are a sine wave, a square wave, a trapezoidal wave, a triangular wave, and a sawtooth wave. The wave of a desirable sawtooth wave is for example, wave (32) - (41) shown in drawing 32 - drawing 41. Among drawing, S is the time from the starting point of wave 1 period, and its $S=1.5\text{msec}$ is desirable in wave (32) - (36), (40), and (41). E is the time from the terminal point of wave 1 period, and its $E=1.0\text{msec}$ is desirable in a wave (33), (39), and (41). What combined the above-mentioned wave can be used in the time of an anode plate and cathode for others. It is such a thing that combined the wave and for example, wave (7) - (31) shown in drawing 7 - drawing 31 is desirable.

[0021] As for the anode plate time / cathode time of the wave to be used, it is desirable that it is 0.2-2.0. It is 0.5-1.5 more preferably.

[0022] As for anode plate quantity of electricity / cathode quantity of electricity of the wave to be used, it is desirable that it is 0.5-2.0. It is 0.7-1.5 more preferably.

[0023] Although various kinds of things can be used for the electrolytic solution so that the explanation about split-face-izing mentioned later may describe, its mixed stock of a hydrochloric acid, or a hydrochloric acid/acetic acid is desirable.

[0024] The photosensitive lithography version can be obtained by forming a photosensitive layer on a base material. When using the base material concerning this invention as a lithography version as a photosensitive constituent for photosensitive-layer formation, generally the photosensitive lithography version is obtained by applying the photosensitive layer of a positive type and a negative mold following after treatment.

[0025] As a positive-type photosensitive layer, specifically Japanese Patent Application No. No. 15499 [five to], 6-190163, As the thing of a publication, and a negative-mold photosensitive layer, on the specifications of 6-333805, 7-2218986, and 7-337687 JP,2-220062,A, 2-219060, 2-217859, 2-189544, JP,64-56442,A, 62-78544, As the thing of a publication, and a photosensitive layer for CPT, a thing given in Japanese Patent Application No. No. 231444 [seven to] and the specification of JP,3-87833,A can be used for the specification of JP,3-56622,B, Japanese Patent Application No. No. 176228 [four to], 6-3313805, and 7-221986.

[0026] the amount of photosensitive-layer painting -- dry weight -- 0.8 - 2.5 g/m² it is -- things -- desirable -- further -- desirable -- 1.2 - 1.8 g/m² it is . A mat agent can be given to a photosensitive layer if needed. Furthermore, in order to rub and to prevent a blemish, and in order [to the photosensitive layer when piling up the photosensitive lithography version] to prevent elution of the aluminum component to the inside of a developer at the time of development, processing which prepares a protective layer in a base material rear face which is indicated by JP,50-151136,A, JP,57-63293,A, JP,60-73538,A, JP,61-67863,A, JP,6-35174,A, etc.

can be performed.

[0027] A pure aluminium and the base material which consists of an aluminium alloy are contained in the aluminum base material which can be used on the occasion of operation of the base material concerning this invention. Various things as an aluminium alloy can be used, for example, metals, such as silicon, copper, manganese, magnesium, chromium, zinc, lead, a bismuth, nickel, titanium, sodium, and iron, and the alloy of aluminum can be used.

[0028] In order to mainly remove the rolling oil on the front face of aluminum in advance of split-face-izing, as for an aluminum base material, it is desirable to perform degreasing processing. The emulsion cleaning processing using emulsions, such as degreasing processing required with solvents, such as a trichlene and thinner, as degreasing processing, kerosine, and triethanol, etc. can be used. Moreover, the solution of alkali, such as caustic alkali of sodium, can also be used for degreasing processing. When the solution of alkali, such as caustic alkali of sodium, is used for degreasing processing, dirt and an oxide film unremovable only by the above-mentioned degreasing processing can also be removed. When the solution of alkali, such as caustic alkali of sodium, is used for degreasing processing, it is desirable for it to be immersed in acids, such as phosphoric acid, a nitric acid, a hydrochloric acid, a sulfuric acid, and a chromic acid, or those mixed acids, and to perform neutralization processing. When carrying out electrochemical split-face-ization to the degree of neutralization processing, especially the thing for which the acid used for neutralization is aligned with the acid used for electrochemical split-face-ization is desirable.

[0029] In this invention, split-face-ization performs split-face-ization using alternating current in the acid electrolytic solution. Although the thing various kinds used for the usual electrochemical split-face-ized method as the acid electrolytic solution can be used, it is desirable to use a hydrochloric-acid system or the nitric-acid system electrolytic solution.

[0030] On the occasion of split-face-ized processing, total quantity of electricity required for processing may be energized continuously, and may be processed at one process, and it can also carry out by allotting the moderate quiescent time or the time when electrolysis processing advance which lowered current density is slow, and dividing into several times. When dividing and performing split-face-ization, it is positive quantity of electricity in division 1 process 100 C/dm². It is desirable to consider as the following and to make into 0.6 - 5 seconds the quiescent time or time when advance of electrolysis processing is slow. Moreover, when dividing and performing split-face-ization, it can be desirable to use the hydrochloric-acid system electrolytic solution, and, thereby, it can form a uniform grain.

[0031] As for the voltage impressed when performing split-face-ization using the nitric-acid system electrolytic solution, 1-50V are desirable, and 5-30V are still more desirable. Current density (peak value) is 10 - 200 A/dm². It is desirable and is 20 - 150 A/dm². It is still more desirable. quantity of electricity -- all down stream processing -- totaling -- desirable -- 100 - 2000 C/dm² -- more -- desirable -- 200 - 1500 C/dm² -- further -- desirable -- 200 - 1000 C/dm² it is . 10-50 degrees C of temperature are desirable, and its 15-45 degrees C are still more desirable. Nitric-acid concentration has 0.1 - 5 desirable % of the weight, and especially its 0.5 - 2.0 % of the weight is desirable. A nitrate, a chloride, amines, aldehydes, phosphoric acid, a chromic acid, a boric acid, an acetic acid, oxalic acid, etc. can be added to the electrolytic solution if needed.

[0032] As for the voltage impressed when performing split-face-ization using the hydrochloric-acid system electrolytic solution, 1-50V are desirable, and 5-30V are still more desirable. Current density (peak value) is 10 - 200 A/dm². It is desirable and is 20 - 150 A/dm². It is still more desirable. quantity of electricity -- all down stream processing -- totaling -- desirable -- 100 - 2000 C/dm² -- more -- desirable -- 200 - 1500 C/dm² -- further -- desirable -- 200 - 1000 C/dm² it is . 10-50 degrees C of temperature are desirable, and its 15-45 degrees C are still more desirable. Hydrochloric-acid concentration has 0.1 - 5 desirable % of the weight, and especially its 0.5 - 2.0 % of the weight is desirable. Although a nitrate, a chloride, amines, aldehydes, phosphoric acid, a chromic acid, a boric acid, an acetic acid, oxalic acid, etc. can be added to the electrolytic solution if needed, it is desirable to add an acetic acid 0.1 to 5% of the weight especially.

[0033] As for the base material split-face-ized by the method of this invention, it is desirable for it to be immersed in the solution of an acid or alkali, and to ***** a front face because of removing a surface smut etc. or controlling a pit configuration etc. It is the so-called desmut treatment. As an acid which can be used, a sulfuric acid, a persulfuric acid, fluoric acid, phosphoric acid, a nitric acid, a hydrochloric acid, etc. are contained, and a sodium hydroxide, a potassium hydroxide, etc. are contained as a base which can be used, for example. Also in these, it is desirable to use the solution of alkali. As an amount of etching, it is 1.0 – 3.0 g/m² as a weight decrement including the smut. It is especially desirable. When the above-mentioned processing is performed by carrying out immersing processing in the solution of alkali, it is desirable for it to be immersed in acids, such as phosphoric acid, a nitric acid, a sulfuric acid, and a chromic acid, or those mixed acids, and to perform neutralization processing. When carrying out anodizing to the degree of neutralization processing, especially the thing for which the acid used for neutralization is aligned with the acid used for anodizing is desirable.

[0034] It is split-face-ized processing, next it is a desirable mode to perform anodizing. Generally anodizing is performed by direct-current electrolysis using a sulfuric acid, a phosphoric acid, or both mixed-water solution. Current density 1 – 10 A/dm² Although the method of electrolyzing is used preferably, there are the method of electrolyzing with high current density in a sulfuric acid, the method of electrolyzing using phosphoric acid indicated by the U.S. Pat. No. 3,511,661 specification otherwise indicated by the U.S. Pat. No. 1,412,768 specification. As anodic oxidation hide thickness, it is 0.5 – 5.0 g/m². It is desirable and 1.5 – 3.5 g/m² is still more desirable. As density of the micro pore to generate, it is 400–700 pieces/m². It is desirable and is 400–600 pieces/m². It is still more desirable.

[0035] After treatment can be performed suitably if needed. For example, you may perform sealing to the aluminum version by which anodic oxidation was carried out if needed. As for sealing, boil processing, steam treatment, silicate-of-soda processing, dichromate solution processing, nitrous-acid processing, ammonium-acetate processing, etc. are mentioned. Furthermore after sealing, you may prepare hydrophilic undercoat. The high molecular compound containing the monomeric unit which has the sulfonic group of a publication etc. can be mentioned to amino acid given in the hydrophilic cellulose indicated by alkali-metal silicate given in a U.S. Pat. No. 3,181,461 specification, and the U.S. Pat. No. 1,860,426 specification as hydrophilic undercoat, JP,60-149491,A, and JP,63-165183,A and its salt, the amines that have the hydroxyl group of a publication in JP,60-232998,A and its salt, phosphate given in JP,62-19494,A, and JP,59-101651,A.

[0036]

[Example] The example of this invention is explained below. this invention is not limited by each following example although it is natural. The example of comparison is described with an example.

[0037] An aluminum plate (the quality of the material 1050, temper H16) with a thickness of 0.24mm is immersed into 1% sodium-hydroxide solution kept at 50 degrees C, and the amount of dissolutions is 2.0 g/m². It was immersed in the solution of the electrolysis processing performed to the degree kept at 25 degrees C after rinsing by performing dissolution processing so that it may become, and this composition for 10 seconds, neutralization processing was performed, and it rinsed after that.

[0038] Subsequently, the wave which showed this aluminum plate to the conditions shown in Table 1 and drawing_1 , or drawing_35 performed electrolysis split-face-ized processing. Temperature of the electrolytic solution in this case was made into 25 degrees C, and distance on an electrode and the front face of a web was set to 10mm. For after the formation of an electrolysis split face, the amount of dissolutions which was immersed into 1% sodium-hydroxide solution kept at 50 degrees C, and includes the smut of the split-face-ized field is 2.0 g/m². It *****ed so that it might become, it was immersed for 10 seconds into 10% sulfuric-acid solution subsequently to 25 degrees C maintained, and it rinsed, after carrying out neutralization processing. Subsequently, quantity of electricity is 150 C/dm² at the constant-voltage conditions of direct-current 20V in 20% sulfuric-acid solution. Anodizing was performed so that it might become, and the base material was obtained.

[0039] Next, the photosensitive constituent application liquid 1-4 of the following composition shown in Table 2 was applied to each base material using the wire bar, it dried at 80 degrees C, and the photosensitive monotonous printing version was obtained. At this time, it is 1.6 g/m² as a photosensitive constituent coverage. It was made to become.

[0040]

(Photosensitive constituent 1)

High molecular compound 1 0.20g Hydroxypropyl beta-cyclodextrin 0.20g Novolak resin 3.70g (for the mole ratio of a phenol / m-cresol / p-cresol, Mw is 4000 at 10/54/36)

Novolak resin 3.30g (for the mole ratio of a phenol / m-cresol / p-cresol, Mw is 8000 at 20/50/30)

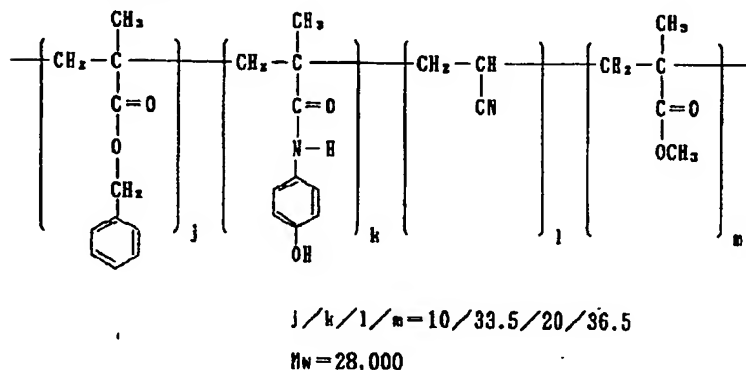
The condensate of a pyrogallol acetone resin (Mw:3000) and O-naphthoquinonediazide-5-sulfonyl chloride (30% of rates of the esterification) 1.50g Polyethylene-glycol #2000 0.20g

Victoria pure blue BOH (product made from Hodogaya Chemistry) 0.09g 2 4-screw

(TORIKURORO methyl)-6-(P-methoxy styryl)-S-triazine 0.15g Fluorine form surfactant FC-430 (product made from Sumitomo 3M) 0.05g cis-1, 2 cyclohexane dicarboxylic acid 0.20g A methyl ethyl ketone/propylene glycol monomethyl ether = 3/7 (wt%) 90.0g [0041]

[Formula 1]

(高分子化合物 1)



[0042]

(Photosensitive constituent 2)

High molecular compound 2 0.50g Novolak resin 6.50g (for the mole ratio of a phenol / m-cresol / p-cresol, Mw is 3500 at 10/54/36)

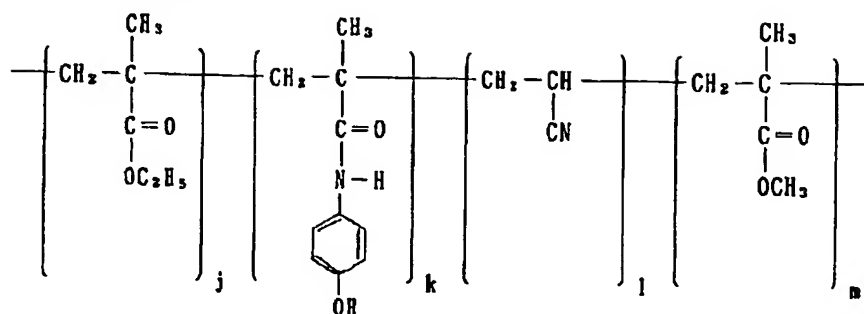
The condensate of a pyrogallol acetone resin (Mw:2000) and O-naphthoquinonediazide-5-sulfonyl chloride (30% of rates of the esterification) 1.70g Polyethylene-glycol #2000 0.20g

Victoria pure blue BOH (product made from Hodogaya Chemistry) 0.08g 2 4-screw

(TORIKURORO methyl)-6-(P-methoxy styryl)-S-triazine 0.15g Fluorine form surfactant FC-430 (product made from Sumitomo 3M) 0.03g cis-1, 2 cyclohexane dicarboxylic acid 0.15g A methyl cellosolve/ethylcellosolve = 3/7 (wt%) 80.0g [0043]

[Formula 2]

〔高分子化合物 2〕



$$j/k/l/m = 5/33.5/25/36.5$$

$$M_w = 20,000$$

[0044]

(Photosensitive constituent 3)

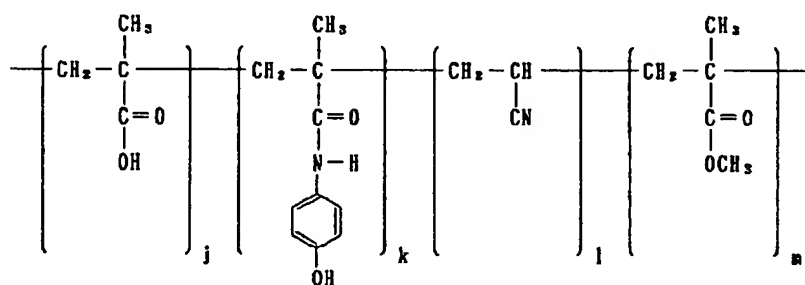
High molecular compound 3 1.20g Novolak resin 6.50g (for the mole ratio of a phenol / m-cresol / p-cresol, M_w is 4000 at 10/54/36)

Condensate of a pyrogallol acetone resin (M_w :2000) and O-naphthoquinonediazide-5-sulfonyl chloride (30% of rates of the esterification) 1.40g P-cresol, the condensation resin (M_w :1500) of formaldehyde, and condensate of O-naphthoquinonediazide 4-sulfonyl chloride (40% of rates of the esterification)

0.30g Polyethylene-glycol #2000 0.20g Victoria pure blue BOH (product made from Hodogaya Chemistry) 0.06g Ethyl violet 0.02g 2,4-screw (TORIKURORO methyl)-6-(P-methoxy styryl)-S-triazine 0.15g Fluorine form surfactant FC-430 (product made from Sumitomo 3M) 0.03g cis-1,2 cyclohexane dicarboxylic acid 0.20g A methyl cellosolve/ethylcellosolve = 3/7 (wt%) 77.0g [0045]

[Formula 3]

〔高分子化合物 3〕



$$j/k/l/m = 10/33.5/20/36.5$$

$$M_w = 34,000$$

[0046]

(Photosensitive constituent 4)

m-cresol-formaldehyde novolak resin (M_w :1700)

0.30g Cresol-formaldehyde novolak resin (the mole ratio of m-cresol / p-cresol is M_w :3000 at 80/20) 1.10g Condensate of a pyrogallol acetone resin and O-naphthoquinonediazide-5-sulfonyl chloride 0.45g (what is indicated by the example of U.S. Pat. No. 3,635,709)

Tetrahydro phthalic anhydride 0.10g Benzoic acid 0.02g t-butylphenol resin (what is indicated by the example of U.S. Pat. No. 4,123,279) 0.01 Oil-blue #603 (Orient chemical-industry incorporated company make) 0.04 4-[p-N-(p-hydroxy benzoyl) aminophenyl]-2,6-screw (TORIKURORO methyl)-S-TORIJIAN 0.02g Megger fuck F177 (Dainippon Ink & Chemicals, Inc.

make) 0.02g Methyl ethyl ketone 15.0g methyl isobutyl ketone 5.0g Propylene glycol monomethyl ether 10.0g [0047] (Homogeneity of a pit) The homogeneity of a pit means having the structure where a small pit overlaps and exists all over the following large pit. As the evaluation method, a photograph of the produced support surface was taken using SEM of a scale factor 500, and the good/poor judgment was performed visually. Here, a large pit points out that whose diameter of opening is 2-30 micrometers among [all] a pit, and a small pit points out that whose diameter of opening is 0.1-2 micrometers among [all] a pit. The less than 0.1-micrometer pit was disregarded.

[0048] (Smoothness of a pit edge) SEM observation was performed like the homogeneity of a pit and viewing estimated fitness/defect for whether the edge section is smooth.

[0049] (Evaluation of the difficulty of becoming dirty at the time of wringing water) For the printing version which painted the photosensitive constituent and was obtained as shown in Table 1 Pile up the half-tone-dot film of a positive picture, and using 4kW metal halide lamp with exposure and the developer which diluted SDR-1 (Konica Corp. make) 6 times with water SGW-3 (Konica Corp. make) performs gum length after development for 27 degrees C and 20 seconds. It applied to the printing machine (DAIYABY Mitsubishi Heavy Industries, LTD.1 F-1), and printed using coat paper, dampening water (51 1.5% of concentration [Etching-solution SG/ by Tokyo Printing Ink Mfg. Co., Ltd. /-]), and ink (highness echo [by TOYO INK MFG. CO., LTD.] M Japanese ink), and concentration of the picture section was set to 1.8 and it printed. The difficulty of becoming dirty at the time of stopping the amount of dampening water distribution here was compared, and good/poor evaluation was performed.

[0050] The error criterion is as follows.

O ** which dirt did not produce -- x which became dirty slightly -- partial - overall -- [0051] (Stop dirt nature) It is fine punctiform dirt which resumed printing after once suspending the printing machine and leaving it for 1 hour, when it printed on the same conditions as the above "evaluation of the difficulty of becoming dirty at the time of wringing water" and 5000 sheets were printed, and was generated 100cm except not ****(ing) the amount of dampening water distribution for the obtained lithography 2 The inner number estimated.

[0052] (Blanket dirt) Except not ****(ing) the amount of dampening water distribution for the obtained lithography, when it printed on the same conditions as the above "evaluation of the difficulty of becoming dirty at the time of wringing water" and 10,000 sheets were printed, the printing machine was once suspended and viewing estimated the grade of the dirt in the ink of the non-picture section on a blanket.

[0053] The error criterion is as follows.

O ** which is hardly dirty -- a little dirty x -- [0054] which is remarkably dirty (Undershirt development nature) 27 degrees C was developed for 20 seconds to the obtained lithography with the developer which performed complete exposure for 60 seconds from 90cm distance by 4kW metal halide lamp, and diluted SDR-1 (Konica Corp. make) 9 times with water. The ink peak of development ink PI-2 (Fuji Photo Film make) was carried out on the printing plate after development, and viewing estimated the adhesion condition of ink.

[0055] The error criterion is as follows.

O ** not adhering -- x which adheres slightly -- [0056] which adheres remarkably (Ball-point remainder) 27 degrees C was developed for 20 seconds with the developer which performed complete exposure for 60 seconds from 90cm distance by 4kW metal halide lamp for it, and diluted SDR-1 (Konica Corp. make) 6 times with water for it after drawing a ball-point (blue ink) by 75g of loads for the printing version of an example and the example of comparison. And as five-point full marks, the grain judging after development could be zero point, when ink was not removed completely.

[0057] (H liquid resistance) 27 degrees C was developed for 20 seconds with the developer which was made to stick the film manuscript which has a half tone dot (solid), 50% half tone dot, and a dot to 0.5 - 5% in the printing version of an example and the example of comparison 100%, performed exposure for 60 seconds from 90cm distance by 4kW metal halide lamp, and diluted SDR-1 (Konica Corp. make) 6 times with water. except for furthermore not using a film manuscript for this sample -- the above and these conditions -- exposure -- carrying out --

the Tokyo Printing Ink Mfg. Co., Ltd. make -- it was immersed in 10% solution of H liquid SG-51 in ordinary temperature for 1 hour, and rinsing dryness was carried out And viewing estimated solid one, and configuration change and dot repeatability of 50% half tone dot.

[0058] The error criterion is as follows.

solid change Configuration change of 50% half tone dot With no O configuration change O with [**] no configuration change -- a defect is seen [**] slightly -- the configuration of a point is distorted slightly x -- a defect is seen clearly x [0059] to which the configuration of a point is distorted clearly The minimum half-tone-dot % [0060] by which there is no defect among 0.5 - 5% of dot repeatability, and the point is held The sample of the example of this invention was good about both evaluation of the difficulty of becoming dirty at the time of wringing the homogeneity of a pit, the smoothness of a pit edge, and water, stop dirt nature, blanket dirt undershirt development nature the ball-point remainder and H liquid resistance so that I might be understood from Table 2. On the other hand, the good result was not obtained in the example of comparison. In addition, although it carried out when it used separately, combining suitably the waves 36-41 shown in drawing 36 - drawing 41 , according to the technique of this invention, the good result was obtained similarly.

[0061]

[Table 1]

電界粗面化条件														
第1電解槽					第2電解槽					第3電解槽				
電解液	電解液のNo	電解液のNo	電解液のNo	電解液のNo	電解液	電解液のNo	電解液のNo	電解液のNo	電解液のNo	電解液	電解液のNo	電解液のNo	電解液のNo	電解液のNo
濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度	濃度
[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]	[g/l]
電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度	電流密度
[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]	[mA/cm^2]
周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数	周波数
[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]
電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状	電解波の形状
図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo	図のNo
Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流	Total電流
[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]	[mA]
実施例1	10.0	0.0	1	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例2	10.0	0.0	1	50	6.0	150	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例3	10.0	0.0	1	60	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例4	10.0	0.0	1	50	6.0	200	10.0	0.0	3	60	4.0	100	10.0	4.0
実施例5	10.0	0.0	1	60	6.0	150	10.0	0.0	3	60	6.0	100	10.0	4.0
実施例6	10.0	10.0	1	50	6.0	200	10.0	0.0	6	60	6.0	100	10.0	4.0
実施例7	10.0	0.0	8	50	4.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例8	10.0	0.0	8	50	4.0	200	10.0	0.0	3	50	4.0	100	10.0	4.0
実施例9	10.0	0.0	9	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例10	10.0	10.0	9	50	6.0	200	10.0	0.0	6	50	4.0	100	10.0	4.0
実施例11	10.0	0.0	11	50	4.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例12	10.0	0.0	32	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例13	10.0	10.0	33	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例14	10.0	0.0	32	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例15	10.0	0.0	33	50	6.0	200	10.0	0.0	6	50	4.0	100	10.0	4.0
実施例16	10.0	0.0	35	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例17	10.0	0.0	36	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
実施例18	10.0	0.0	37	50	6.0	200	10.0	0.0	2	50	4.0	100	10.0	4.0
比較例1	10.0	0.0	4	50	4.0	400	10.0	0.0	—	—	—	—	—	—
比較例2	10.0	0.0	4	50	8.0	200	10.0	0.0	4	50	5.0	200	10.0	—
比較例3	10.0	0.0	6	50	6.0	150	10.0	0.0	4	50	4.0	150	10.0	5.0
比較例4	10.0	0.0	6	50	4.0	400	10.0	0.0	—	—	—	—	—	—
比較例5	10.0	0.0	6	50	4.0	150	10.0	0.0	6	50	4.0	100	10.0	4.0

[0062]

[Table 2]

	感光性 組成物	ピット の均一性	エッジ の滑らかさ	の 汚れたとき	湿し水を 拭いたとき	スト ップ 汚れ個 数	ブ ラ ン ケ ッ 汚 れ	ア ン ダ ー 現 像 性	ボ ー ル 残 り	H 液 耐 性		
										ベ タ	50 網 点	再 現 性
実施例 1	1	良好	良好	○	0	0	○	○	5	○	○	2
実施例 2	1	良好	良好	○	1	0	○	○	5	○	○	2
実施例 3	1	良好	良好	○	0	0	○	○	5	○	○	2
実施例 4	2	良好	良好	○	0	0	○	○	5	○	○	2
実施例 5	2	良好	良好	○	0	0	○	○	5	○	○	2
実施例 6	2	良好	良好	○	1	0	○	○	4	○	○	2
実施例 7	1	良好	良好	○	1	0	○	○	5	○	○	2
実施例 8	2	良好	良好	○	0	0	○	○	4	○	○	2
実施例 9	3	良好	良好	○	0	0	○	○	4	○	○	2
実施例 10	3	良好	良好	○	0	0	○	○	5	○	○	2
実施例 11	4	良好	良好	○	1	0	○	○	5	○	○	2
実施例 12	4	良好	良好	○	1	0	○	○	4	○	○	2
実施例 13	2	良好	良好	○	0	0	○	○	5	○	○	2
実施例 14	3	良好	良好	○	0	0	○	○	5	○	○	2
実施例 15	4	良好	良好	○	0	0	○	○	4	○	○	2
実施例 16	1	良好	良好	○	1	0	○	○	5	○	○	2
実施例 17	2	良好	良好	○	0	0	○	○	5	○	○	2
実施例 18	3	良好	良好	○	0	0	○	○	5	○	○	2
比較例 1	1	不良	不良	×	20	△	×	×	3	△	×	5<
比較例 2	2	不良	不良	△	26	△	△	△	3	△	×	5
比較例 3	3	不良	不良	△	35	×	△	△	1	×	×	5<
比較例 4	4	不良	不良	×	22	×	×	×	0	×	△	5<
比較例 5	2	不良	不良	△	29	×	×	×	1	△	×	5<

[0063]

[Effect of the Invention] As described above, according to this invention, the production method of the base material for the lithography versions that the photosensitive lithography version which can manufacture quality printed matter stably was obtained was able to be offered, such a base material for the lithography versions was able to be offered, and such a photosensitive lithography version was able to be offered.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

- [Drawing 1] The used police box current wave type is shown (1).
- [Drawing 2] The used police box current wave type is shown (2).
- [Drawing 3] The used police box current wave type is shown (3).
- [Drawing 4] The used police box current wave type is shown (4).
- [Drawing 5] The used police box current wave type is shown (5).
- [Drawing 6] The used police box current wave type is shown (6).
- [Drawing 7] The used police box current wave type is shown (7).
- [Drawing 8] The used police box current wave type is shown (8).
- [Drawing 9] The used police box current wave type is shown (9).
- [Drawing 10] The used police box current wave type is shown (10).
- [Drawing 11] The used police box current wave type is shown (11).
- [Drawing 12] The used police box current wave type is shown (12).
- [Drawing 13] The used police box current wave type is shown (13).
- [Drawing 14] The used police box current wave type is shown (14).
- [Drawing 15] The used police box current wave type is shown (15).
- [Drawing 16] The used police box current wave type is shown (16).
- [Drawing 17] The used police box current wave type is shown (17).
- [Drawing 18] The used police box current wave type is shown (18).
- [Drawing 19] The used police box current wave type is shown (19).
- [Drawing 20] The used police box current wave type is shown (20).
- [Drawing 21] The used police box current wave type is shown (21).
- [Drawing 22] The used police box current wave type is shown (22).
- [Drawing 23] The used police box current wave type is shown (23).
- [Drawing 24] The used police box current wave type is shown (24).
- [Drawing 25] The used police box current wave type is shown (25).
- [Drawing 26] The used police box current wave type is shown (26).
- [Drawing 27] The used police box current wave type is shown (27).
- [Drawing 28] The used police box current wave type is shown (28).
- [Drawing 29] The used police box current wave type is shown (29).
- [Drawing 30] The used police box current wave type is shown (30).
- [Drawing 31] The used police box current wave type is shown (31).
- [Drawing 32] The used police box current wave type is shown (32).
- [Drawing 33] The used police box current wave type is shown (33).
- [Drawing 34] The used police box current wave type is shown (34).
- [Drawing 35] The used police box current wave type is shown (35).
- [Drawing 36] The used police box current wave type is shown (36).
- [Drawing 37] The used police box current wave type is shown (37).
- [Drawing 38] The used police box current wave type is shown (38).
- [Drawing 39] The used police box current wave type is shown (39).
- [Drawing 40] The used police box current wave type is shown (40).

[Drawing 41] The used police box current wave type is shown (41).

[Description of Notations]

1-41 ... (police box current) Wave.

[Translation done.]